*Health Consultation*

# Toxgon Corporation Seattle
# Seattle, King County, Washington

June 2, 2000

**Prepared by**
**The Washington State Department of Health**
**Under a Cooperative Agreement with the**
**Agency for Toxic Substances and Disease Registry**

## FOREWORD

The Washington State Department of Health (DOH) has prepared this Health Consultation in cooperation with the Agency for Toxic Substances and Disease Registry (ATSDR). ATSDR is part of the U.S. Department of Health and Human Services and is the principal federal public health agency responsible for health issues related to hazardous waste. This Health Consultation was prepared in accordance with methodologies and guidelines developed by ATSDR.

The purpose of this Health Consultation is to identify and prevent harmful human health effects resulting from exposure to hazardous substances in the environment. The Health Consultation allows DOH to respond quickly to a request from concerned residents for health information on hazardous substances. It provides advice on specific public health issues. DOH evaluates sampling data collected from a hazardous waste or industrial site, determines whether exposures have occurred or could occur, reports any potential harmful effects, and recommends actions to protect public health.

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# Background and Statement of Issues

As part of the cooperative agreement with ATSDR, the Washington State Department of Health (DOH) was asked to evaluate the potential impacts on human health posed by eight businesses in the South Park community. The petitioner, the Community Coalition for Environmental Justice (CCEJ), worked with the community to prepare a list of sites of concern. One of the sites listed was the ToxGon Corporation (ToxGon). This site was formerly known as Penberthy Electromelt International (PEI). Using available data, this health consultation evaluates potential human health effects resulting from operations at ToxGon.

### *Site Background*

ToxGon (formerly known as PEI) is located at 631 S 96th Street in the South Park neighborhood of Seattle. The facility is approximately 1.7 acres and consists of a building, two storage sheds, and a hazardous waste drum storage area.[1] There is also an unoccupied two-story house on the northeast corner of the property. This facility has been located at this site since 1955.[1] Heavy and light industry, agricultural operations, and residential housing are located near the site.[2] The population within two miles of the property is estimated to be between 2,000 and 4,000 persons.[2]

Surface water and stormwater runoff from ToxGon flow into a storm ditch located near the southern border of the property.[1] The contents of the ditch then flow into a storm sewer (South 96th Street storm sewer) approximately one-quarter mile southeast of the facility. This sewer terminates in the Duwamish River which is 0.5 miles east and northeast of ToxGon.[1] The back and side yards of the property are completely enclosed with an approximately 6 foot chain link fence.[3]

In 1981, the owner of PEI patented a unique furnace technology that does not use a flame and does not produce ash as a final product.[4] Capable of destroying hazardous wastes, this pyro-converter, or thermal treatment unit, combusts the organic components of dangerous and hazardous wastes and incorporates the inorganic constituents into an inert glass matrix. The furnace is lined with refractory bricks and has a pool of molten glass on the bottom. The glass is heated electrically and maintains a temperature of 2200 degrees Fahrenheit. In the presence of oxygen, the organic molecules decompose and the combustion products are carbon dioxide, water vapor, and hydrogen chloride. Any ashes that are produced are incorporated into the glass matrix. The thermal treatment unit and associated equipment have since been disassembled.

The Puget Sound Clean Air Agency (PSCAA) permitted the use of the glass furnace and the associated experimental air pollution control technologies.[5] The control technologies included scrubbers, limestone absorbers, and cyclones to remove the produced carbon dioxide, water vapor, and hydrogen chloride. Water used in the scrubbers was pumped to cooling ponds and then settling tanks where particulates settled, the pH was adjusted, and the water was later discharged to the sewer system. This was a permitted release and up to 1991 PEI was allowed to discharge 3000 gallons per month of waste water to the sanitary sewer.[6] When in operation, PEI had 14 employees and at times operated 24 hours per day, seven days a week.[1]

In 1985, two test burns were conducted to provide data to complete the Resource Conservation and Recovery Act of 1976 (RCRA) Part A application. In 1985, PEI was also granted RCRA interim operating status for the use of the pyro-converter and also for the storage of hazardous wastes.[1] Hazardous wastes were stored on-site before being used as raw materials in the treatment unit. PEI began using the pyro-converter in 1986 to process hazardous and dangerous wastes. PEI also operated a smaller second furnace that was used less frequently for testing and demonstration purposes. In March of 1991, the Environmental Protection Agency (EPA) denied PEI's thermal treatment unit final operating permit and terminated PEI's interim status operating permit because PEI had been unable to provide EPA with a complete RCRA Part B permit.[7] The application did not contain the necessary information regarding the required descriptions of the treatment unit, information on environmental performance standards and on the prevention of air emissions, information on operating standards, a risk evaluation, or a proposal for a trial burn. An EPA press release stated that the denial of the permit application was due to "the inability of PEI to provide EPA with information demonstrating that airborne releases from the treatment unit do not pose a health risk to surrounding community."[8] It was also noted that the denial was not based on a technical review of the application, but was on the basis that the application was grossly deficient and did not allow for a thorough evaluation of the facility's ability to comply with permitting standards.[7] PEI still maintained interim status for hazardous waste storage. From June 6, 1991, through 1995, with the exception of a three-day test in 1992, PEI did not operate the furnace. In November 1995, ToxGon took ownership of PEI and maintained RCRA interim status for the storage of hazardous wastes.[9]

In 1991, ToxGon was added to the Washington State Department of Ecology's (Ecology) list of suspected or contaminated sites due to potential releases to ground water, surface water, soil and sediment.[10] Air releases were listed as unknown.[10] In 1998, ToxGon declared Chapter 11 bankruptcy and they are currently working with Ecology to finalize a workplan to investigate surface and subsurface soils (also ground water and surface water if necessary) for the presence of contamination that may have been released as a result of PEI operating the thermal treatment unit. In addition, as required by RCRA regulations ToxGon and Ecology are also working to finalize a facility wide workplan to investigate surface and subsurface soils (also ground water and surface water if necessary) for the presence of contamination that may have been released from other working areas of the facility. If contamination above human health-based standards are found at the site, ToxGon, under Ecology oversight, will cleanup contaminated areas of the facility to meet federal and state cleanup levels.

### *Community Concerns*

Examination of records at the PSCAA show that there are only two documented complaints regarding emissions from ToxGon.[11] These complaints were in 1989 and 1990 and pertained to smoke and odors that were emanating from the facility. These appeared to be isolated incidents. DOH held a public meeting in South Park, Seattle, in January 2000, to collect community concerns regarding this facility.[12] No community concerns were noted.[12]

***Environmental Contamination***

By 1991, PEI claimed to have processed about 5,000 drums, or a total of 1250 tons, of RCRA regulated wastes.[13] Wastes processed included: creosote and pentachlorophenol sludges, aromatic oils, paint solvents and thinners, paint booth filters, contaminated gravel and soil, oils, waste ink, adhesives, phenol-formaldehyde and other resins and vehicles.[14,15] Other materials possibly treated at the site during trial burns included: trichloroethene, trichlorobenzene, tetrachloroethene, polychlorinated biphenyls, dioxin containing waste, spent aluminum potliners, acrylonitrile containing waste, assorted solvents, pesticides, and chromite ores.[16]

In June 1987, a private corporation completed a environmental risk assessment survey to look at potential areas of environmental impairment due to releases of pollution at PEI.[2] The survey focused on environmental and waste management practices and concluded that "the probability of incurring environmental impairment associated with releases of pollution due to sudden and accidental causes as well as non-sudden and gradual causes is below average."[2] The survey also pointed out some inadequacies including: the need to quantitate hydrogen chloride and particulates emissions, the necessity of sealing junctions in the solvent storage area, and the necessity of constructing secondary containment.[2]

In 1989, Ecology completed a dangerous waste and RCRA compliance inspection.[17] The only noted compliance issues, with environmental impacts, dealt with the labeling and handling of dangerous wastes and some inadequacies in the closure plans. PEI owners were very reluctant to label produced glass as a dangerous waste, despite the Ecology labeling requirement. In October 1990, a RCRA Facility Assessment (RFA) was conducted by a private corporation for EPA.[1] The goal of this RFA was to evaluate releases of contamination from the ToxGon facility. Many conclusions of this assessment were similar to the conclusions determined in the 1987 site study.[1] There was concern regarding the lack of containment berms around the facility and thus the ability of a spill or leak to impact surrounding soils. Similarly, it was shown that the surface runoff from the facility went directly to a storm drain that terminates in the Duwamish River. There were also concerns regarding the outdoor storage yard as it was underlain by overlapping steel plates that may not provide a complete barrier to the soils below. The report stated that soils in the back yard may be contaminated from the previous disposal of foundry sands, although the actual composition of the soils was unknown. The potential for contamination to soil and groundwater from spills, leaks, discharges, and overflow from the settling tanks and cooling ponds was also noted. Air releases were listed as unknown and the RFA recommended comprehensive monitoring of air emissions, including metals and volatile organic compounds (VOCs).

In March 1991, the site was added to the Washington State list of known or suspected contaminated sites due to potential releases to groundwater, surface water, soils, and sediments.[9] Concerns also existed due to information Ecology received from an employee stating that lead oxide had previously been buried on the property. A site hazard assessment workplan was created to provided Ecology with sufficient information in which to score the site by the Washington Ranking Method.[18] This workplan was never carried out due to difficulties obtaining access to the property. A

characterization of on-site contamination has not been completed.

In July 1991, Ecology sampled sediments from the creek that runs behind ToxGon.[19] Samples were collected upstream of the facility and from two downstream areas that could potentially be impacted from activities at the site. Sediments were examined for total metals, total petroleum hydrocarbons, VOCs, polyaromatic hydrocarbons, polychlorinated biphenyls, and pesticides. Certain VOCs (including toluene and xylene) were detected only from the two downstream areas, but the levels detected were below ATSDR and Washington State health-based screening values and are therefore considered to be safe levels. Similarly petroleum hydrocarbons were detected only at one downstream location, but again the levels detected were below ATSDR and Washington State health-based screening values. Arsenic and chromium were detected at levels slightly above human health-based screening values at locations both upstream and downstream of ToxGon. It can not be assumed that metal contamination is coming from activities at the site alone as metal contamination was also detected in sediments upstream of the ToxGon property. Further sampling will be necessary to determine the source(s) of this contamination.

Although ToxGon no longer has RCRA interim status for operating the thermal treatment unit, they still maintain RCRA interim status for the storage of hazardous waste.[15] In 1987, this interim storage capacity was 5,000 gallons but in 1991 Ecology approved a storage capacity increase up to 11,000 gallons.[15] Ecology has continued to inspect ToxGon for compliance with the State of Washington dangerous waste regulations.[15] Ecology site visits in 1994 and 1997 noted that approximately 75 drums of dangerous waste glass were being stored on the facility and no violations were noted.[15] A 1999 site visit, by both Ecology and DOH, noted that approximately 15 drums containing hazardous waste remained on the property.[3] At the time of the 1999 site visit, the thermal treatment unit had been dismantled and was packed in roll-off containers ready for removal from the site. A total of 13 roll-off containers were on the property. The dangerous waste glass and all the equipment associated with the thermal treatment unit had been removed from the interior of the building and was placed in roll-off containers awaiting disposal.[3] According to ToxGon, in December 1999, the roll-off containers filled with dangerous waste glass and the disassembled thermal treatment unit were sent to a RCRA permitted hazardous waste landfill for treatment and disposal.[20]

In 1998, ToxGon sold the back 100 feet of the property and also filed for bankruptcy.[21] ToxGon is still responsible for conducting an investigation at the facility. This investigation will include the former thermal treatment unit, the former dangerous waste storage unit, and all other areas that had a potential to release dangerous waste constituents to soils, ground water, and surface water. Currently, Ecology is working with ToxGon to finalize this workplan. If any on-site contamination is discovered during the investigation, ToxGon will cleanup those contaminated areas to meet federal and state cleanup standards. If warranted, this cleanup will include off-site areas that may have been impacted by activities at ToxGon.

# Discussion

A facility-wide investigation of any documented and potential contamination at ToxGon has not been conducted. Similarly, the extent of potential off-site migration is also unknown. In light of the types and quantity of hazardous wastes that were once stored and treated at this facility, the potential for contamination is present.[1,2,18,19] As the site is fenced and access is limited, exposure of community members to potential contamination would likely be through wind blown dust or groundwater and surface water contamination. The majority of the outside yard at ToxGon is vegetated thus wind blown dust would be minimal. Where hazardous wastes were stored outdoors, the area is not completely vegetated and during dry summer months there is a potential for wind blown dust generation. Surface water contamination, specifically of the creek behind the facility and the Duwamish River, is also another area for potential concern although there is no evidence to suggest that people are swimming or bathing in these waterways. The presence and extent of contamination, if any, in these media is currently unknown. ***Health risks to members of the South Park community that might come in contact with wind blown dust and surface water is considered to be indeterminate.*** Water for industrial and domestic use at ToxGon and the surrounding vicinity is supplied by the Seattle Water Department, thus if contaminated groundwater existed below ToxGon, it would not be a public health concern.

The RCRA facility-wide investigation will investigate areas where there were documented and potential spills to the environment. If contamination is found on-site, ToxGon will cleanup the contaminated areas to meet federal and state health-based cleanup standards. Ecology will oversee this investigation and the cleanup process and DOH will assist and provide technical support.

## Chemical Exposure and Children

Children can be uniquely vulnerable to the hazardous effects of many environmental toxicants. When compared to adults, pound for pound of body weight, children drink more water, eat more food, and breathe more air. Children have a tendency to play closer to the ground and often put their fingers in their mouths. These factors lead to an increased exposure to toxicants in dust and soil. Additionally, before birth, the fetus is highly sensitive to many chemicals that may cause organ malformations and even premature death. For these reasons, it is very important to consider the specific impacts that contaminants may have on children, as well as other sensitive populations.

The backyard at ToxGon is completely fenced and access is limited. It is unlikely that children will be trespassing on this property. Similarly, it is also unlikely that they will be playing in the immediate vicinity as ToxGon is primarily located in a light industrial area. ***Until the potential for contamination is characterized, the risks to children that might come in contact with dust or surface water that has been impacted by ToxGon, must be considered to be unknown or indeterminate at this time.*** If contamination is found on-site, ToxGon will cleanup the contaminated areas to meet federal and state health-based cleanup standards. DOH will work with Ecology to ensure that child health will be protected.

# Conclusion

***Health risks to members of the South Park community, including children, that might come in contact with wind blown dust, surface water, or groundwater, that has been impacted by activities at ToxGon is considered to be indeterminate.*** The only possible completed exposure pathways are through wind blown dust and surface water contamination. As mentioned previously, it is unlikely that adults or children are coming in contact with surface water. Similarly, unless children are playing in the immediate vicinity, exposures to wind blown dust are also unlikely, although not impossible. Until contamination at the ToxGon facility is fully characterized, the risks to the public must be classified as unknown.

# Recommendations/Public Health Action Plan

- A thorough characterization of contamination on-site and the extent of potential off-site migration of this contamination is needed. This includes soil sampling and may require sampling of groundwater and surface water.
  - **Actions:** Ecology is working with ToxGon to finalize a facility-wide investigation workplan to characterize contamination that may have resulted from known operations of the former thermal treatment unit or potential releases from other working areas of the facility. Once this workplan is approved by Ecology, DOH is confident that the sampling will be sufficient to fully characterize any on-site and off-site contamination. DOH will continue to work with Ecology to confirm that the final sampling plan is adequate.

- To ensure that public health is protected, DOH will evaluate data that results from sampling of the ToxGon site and potentially impacted off-site areas. DOH will also follow-up to ensure that all necessary site cleanup is accomplished in a timely fashion.

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## Glossary

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| **Agency for Toxic Substances and Disease Registry (ATSDR)** | The principal federal pubic health agency involved with hazardous waste issues, responsible for preventing or reducing the harmful effects of exposure to hazardous substances on human health and quality of life. ATSDR is part of the U.S. Department of Health and Human Services. |
| **Contaminant** | Any chemical that exists in the environment or living organisms that is not normally found there. |
| **Exposure** | Contact with a chemical by swallowing, by breathing, or by direct contact (such as through the skin or eyes). Exposure may be short term (acute) or long-term (chronic). |
| **Groundwater** | Water found underground that fills pores between materials such as sand, soil, or gravel. In aquifers, groundwater often occurs in quantities where it can be used for drinking water, irrigation, and other purposes. |
| **Hazardous substance** | Any material that poses a threat to public health and/or the environment. Typical hazardous substances are materials that are toxic, corrosive, ignitable, explosive, or chemically reactive. |
| **Inorganic** | Compounds composed of mineral materials, including elemental salts and metals such as iron, aluminum, mercury, and zinc. |
| **Media** | Soil, water, air, plants, animals, or any other part of the environment that can contain contaminants. |
| **Organic** | Compounds composed of carbon, including materials such as solvents, oils, and pesticides which are not easily dissolved in water. |
| **Risk** | The probability that something will cause injury, linked with the potential severity of that injury. Risk is usually indicated by how many extra cancers may appear in a group of people who are exposed to a particular substance at a given concentration, in a particular pathway, and for a specified period of time. For example, a 1%, or 1 in 100 risk indicates that for 100 people who may be exposed, 1 person may experience cancer as a result of the exposure. |
| **Volatile organic compound (VOC)** | An organic (carbon-containing) compound that evaporates (volatilizes) easily at room temperature. A significant number of the VOCs are commonly used as solvents. |

## CERTIFICATION

This Toxgon Corporation Consultation was prepared by the Washington State Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun.

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The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and occurs with the findings.

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